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Review Paper

Review Article on Effervecent Grannules

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ABSTRACT

Pharmaceutical formulations known as effervescent granules are made to dissolve in water and release carbon dioxide, creating a fizzy solution. Along with acids and carbonates like sodium bicarbonate and citric acid, which react when dissolved, they also contain active substances. These granules increase patient compliance, conceal off-putting flavors, and improve drug stability. They are frequently used for vitamin supplements, antacids, and analgesics. Effervescent granules have the benefits of increased palatability, simplicity of administration, and quick absorption. However, because moisture might cause early reactions, they must be properly packaged to avoid exposure. The stability and effectiveness of effervescent pharmaceuticals have been improved by advancements in formulation technology, making them a popular option for both prescription and over-the-counter medications.

INTRODUCTION

1. EFFERVECENT

Quadrant granules are among the most widely used oral dosage forms. The majority of medications, including cough formulas, pain relievers, and measures, were manufactured as foam granules. Oral medications and foam bases including sodium bicarbonate, citric acid, and tartaric acid are manufactured from protective grains. (1) Many medications, including cough remedies, antacids, and painkillers, contain foam granules. (4) When water is present, reactions between bases and acids result in the production of CO2 and the quick dispersion of granules. Taste masking works well since the CO2 release lets you see the API resolution underwater. 3HCO3 (AQ) + H3C6H5O7 (AQ) 3H2O (AQ) + 3CO2+NA3C6H5O7 (AQ)
(Citric Acid) (Citric Acid) (Hydoxy Physical) (W ater) (Carbon) (Sodium Carbon)(Citric Acid) (Cit ric Acid)

2. MECHANISM OF GRANNULES

As we already know, it contains luminescent granular acid (citric acid) and base (sodium b

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icarbonate), which reacts quickly with water. The release of CO2 gases helps the API reso lve with water, improving taste masking effe cts.

H2O + 3NHCO3 (AQ) NA3C6H5O7 + 4H2 O + 3CO2 (AQ)

(citric acid) (sodium bicarbonate) (sodium cit rate) (water) (Wed) (Wed)

C4H6O6 NA2C4H4O6 + 2H2O + 2CO2 (g) (G) (Tartarimatium) carbonate) (water) (car bon dioxide) The contact with it release co2[6-7]

3. THE INGREDIENTS REQUIRED FOR T HE FOAMING OF GRANULES ARE ACI D AND BASE. YOU ALSO NEED SWEET ENERS AND BINDERS. [3]

1. Acids Includes citric acid, tartar acid, obesi ty, obesity, fumaric acid.
2. Bases Contains sodium carbonate, sodium carbonate, sodium carbonate, potassium bicar bonate, and sodium ringing sodium. 3. Cute cl oth mannitol, sucrose.
4. Bind Agent - Starch Paste.
5. Vehicle - (Nonaqueous Act. [3]

4. INGREDIENT USE IN PREPRATION OF GRANULES [8]

Table 01: Ingredients use in foaming granules.

1. Aspirin active ingredient 250.0 mg
2. Citric Acid - Sorbyl Agent 10.0 mg
3. Calcium Carbonate - Sorbyl Agent 10.0 m g
4. Sucrose use as sweetener 1.0 mg
5. Magnesium Stearate Agent 2.0 mg
6. Strength binder/damping 10.0 mg
7. Water binder Q.S.

5. METHOD OF PREPRATION OF GRANNULES

Steps to use:

I. All ingredients pass through Sieve No. 60
II. Mix the powder and send it to a hot porcelai n bowl and dry the granules at 40˚C
III. Pass mixture into Sieve No. 14 and No. 20
IV. The granules dried with **Sieve** No. 14 were packed with these granules in **large** mouth c aps.

6. PREPARATION OF FOAM GRANULES

Efficient granules are manufactured using a variety of methods, including wetting metho ds, drying or fusion methods, hot melt and tir ed techniques, and inhumane methods.

- **WET GRANULE SYSTEM METHOD**

This is the oldest method of granule preparation.

I. First, all components are derived from the po wder and by sieve to induce uniform particle size. [10]
II. In the tactile process, wet mass is an importa nt step.
III. This process adds powder mixture and wettin g. [11]
IV. The wet powder mixture is guided to a netwo rk screen for creating granules of the desired size. next, these granules are dried on a hot ai r stove. [12]

- **HOT ENVIRONMENT -FUN [13.5]**

Initially, ingredients required until the melt mass is preserved is heated at a temperature50° C. and get granules. They build drygranulesat a temperature of less than 60˚C. The procedure measured and systemed the weight of the material. At the temperature of C, the "50" column is melted by meltedmass "cooling at room temperature" and then consume 10 sieve to input dried granules is at a temperature of less than 60 ° C. Merger or drying method [14] This method is most important for preparing granules. This method removes the

compressions.]. Use a single sewage acid citrate binder,cool it at in the room temperature, keep granules,dry it . The absence of IV [15] compares and considers the materials and turns on the Chinese kitchen. Alcohol drops(ethanol)SIEVE No. 10, adding drops in the shape of stored granules, and . The granules are completely stored.

7. ASPIRIN

Aspirin created an acetyl salicylic acid (ASA) brand to produce pain, inflammation and monopoly in the anti-inflammatory drug (NSAID). Certain inflammatory Kawasaki disease, permeau and rheumatoid columns. [16] Aspirin used to treat aschemicpain, blood clots and heart attracts Aspirin works like other NSAIDs, y, there is a high risk of bleeding and taking alcohol, other NSAIDs and other blood diluents. Aspirin is not recommended at the end of pregnancy. In general, it is not recommended for children with infectious diseases because of the risk of rei syndrome. [16 This about 40,000tons per year (44,000tons) (50to 111 billion).[17] List of major drugs of the World Health Organization (WHO). [18] In 2022, it was the 36th most frequently prescribed to the drug therapy with more than 16 million recipes in the United States. [19][20] Chemical characteristics Gradually hydrated in contact with moisture, vinegar, salicylic acid [26] NIOSH (National Instituteof Security and Labor Hygiene) [23]

The synthesis of aspirin from salicyclic acid, process is called acetylation. [21-22] water acid is treated as a mountain blouse, which leads to a chemical reaction that converts the hydroxyl group of Salifican to an essential group (R-OH-R-COOCH3). This process provides aspirin and acetic acid. Therefore, it is recommended without water. [25]. The physical properties of the acetyl derivatives of the salicylicacid are white, crystalline weakacid materials dissolved at 136 ° C (277 ° F) [27]and decomposed at 140 â (284 ° F). [28] Constant acidity(PKA)[29] [30]. Manydrugs are approved by the regulatory organs only for a singlepolymorphism form. [31] Only the polymorphism ofaspirin (form I) has been proven until 2005, but since the 1960s, other polymorphismdiscussed, andthe report has been discussed since 1981. At that time,control impurities, but if you look back, it was an II Ashma. [32]

8. MEDICAL USE

Aspirin is used in the treatment of a number of conditions, including fever, pain, rheumatic fever, and inflammatory conditions, such as rheumatoid arthritis, pericarditis, and Kawasaki disease.[11] Lower doses of aspirin have also been shown to reduce the risk of death from a heart attack, or the risk of stroke in people who are at high risk or who have cardiovascular disease, but not in elderly people who are otherwise healthy.[33]There is evidence that aspirin is effective at preventing colorectal cancer, though the mechanisms of this effect are unclear.[34].

REFERENCES

1. Salomy, Monica,Diyya et.al.,“Formulation and Evaluation of Metronidazole Effervescent Granules”. Int. J. of pharmaceutical sciences and research, 2018; 9(6): 2525-2529.
2. Sayani Bhattacharya, Swetha G. “Formulation and evaluation of Effervescent granules of Fexofenadine hydrochloride”. The Pharma Innovation Journal, 2014; 3(3).
3. KDivya, GVamshi, T.Vijaykumar et.al., “Review on Introduction of Effervescent tablets and granules”. Kenkyu journal of pharmacology, 2020; 6: 1-11. 4. Jinan Al-Mousaury, Zahraa Al-Hussainy et.al.
4. Jinan Al-Mousaury, Zahraa Al-Hussainy et.al., “Formulation and Evaluation of

effervescent granules of Ibuprofen". Int. J. of Applied Pharmaceutics, 2019; 11(6): 66 -69.
5. Solanki H.K, Basuri T, Thakkar J.H and Patel C.A. "Recent advances in granulation technology". Int. J. of pharmaceutical science review and research, 2010; 5(3): 48-54.
6. Foldvari M. "Nanopharmaceutics innovation in gene therapy: moving towards non viral and non invasive delivery methods." J. of nanomedine biotherapeutics discovery, 2014; 4: 135.
7. Maurya S.D, Rawal R.K, Jha S, Chauhan P.S, Kumar A. "Drug loaded beads: Current status". American J. of pharm tech Research, 2013; 3(1): 331-337.
8. Srinath K.R et.al., "Formulation and evaluation of Effervescent Tablets of paracetamol". Int, J. of pharmaceutical research and development, 2011; 3(3): 76-104.
9. Polli J.E, Rekhi S.G et.al., "Methods to compare dissolution profile and a rationale for wide dissolution specification for metoprolol tartar.
10. Bhusan S.Y, Sambhaji S.P, Anant R.P et.al., " New drug delivery system for elderly. Indian Drug, 2000; 37: 312-318. (google scholar).
11. Juti Rani Devi, Bidyut Das. "preparation and evaluation of Ibuprofen effervescent granules", 2019; 12(8).
12. Ansel H.C, Popovich N.G, Allen L.V.J.R. "Pharmaceutical Dosage Form and Drug Delivery system". B.I Waverly pvt. ltd. NewDelhi., 1999; 6: 469-471.
13. Moghimipour E, Akhgari A and Ghassemian Z. "Formulation of Glucosamine Effervescent Granules". Science Med. Journal, 2010; 9(1): 21-34.
14. A Review of Patents on Effervescent granules.
15. CVS. Subramanyam unit operations textbook. Effervescent granules by non aqueous method, 127.
16. "Aspirin". American Society of Health-System Pharmacists. 29 November 2021. Archived from the original on 25 April 2017 – via Drugs.com.
17. Jones A (2015). Chemistry: An Introduction for Medical and Health Sciences. John Wiley & Sons. pp. 5–6. ISBN 978-0-470-09290-3.
18. The selection and use of essential medicines 2023: web annex A: World Health Organization model list of essential medicines: 23rd list (2023). Geneva: World Health Organization. hdl:10665/371090. WHO/MHP/HPS/EML/2023.02.
19. ClinCalc. Archived from the original on 30 August 2024. Retrieved 30 August 2024.
20. "Aspirin Drug Usage Statistics, United States, 2013 - 2022". ClinCalc. Retrieved 30 August 2024.
21. Reynolds EF, ed. (1982). "Aspirin and similar analgesic and anti-inflammatory agents". Martindale: the extra pharmacopoeia (28th ed.). Rittenhouse Book Distributors. pp. 234–82. ISBN 978-0-85369-160-0.
22. "Acetylsalicylic acid". NIOSH Pocket Guide to Chemical Hazards. U.S. National Institute for Occupational Safety and Health (NIOSH). 11 April 2016. Archived from the original on 11 May 2017.
23. "Appendix G: 1989 Air contaminants update project – Exposure limits NOT in effect". NIOSH pocket guide to chemical hazards. National Institute for Occupational Safety and Health. 13 February 2015. Archived from the original on 18 June 2017.
24. Palleros DR (2000). Experimental organic chemistry. New York: John Wiley & Sons. p. 494. ISBN 978-0-471-28250-1.
25. Chemical of the Week -- Acetic Acid and Acetic Anhydride". www.eng.uwaterloo.ca.

Archived from the original on 3 November 2022.
26. Barrans R (18 May 2008). "Aspirin aging". Newton BBS. Archived from the original on 18 May 2008.
27. Carstensen JT, Attarchi F (April 1988). "Decomposition of aspirin in the solid state in the presence of limited amounts of moisture III: Effect of temperature and a mechanism". . 77 (4): 318–21. doi:10.1002/jps.2600770407. PMID 3379589.
28. Myers RL (2007). The 100 most important chemical compounds: a reference guide. ABC-CLIO. p. 10. ISBN 978-0-313-33758-1. Archived from the original on 10 June 2013.
29. "Acetylsalicylic acid". Jinno Laboratory, School of Materials Science, Toyohashi University of Technology. 4 March 1996. Archived from the original on 20 January 2012. Retrieved 12 April 2014.
30. Myers RL (2007). The 100 most important chemical compounds: a reference guide. ABC-CLIO. p. 10. ISBN 978-0-313-33758-1. Archived from the original on 10 June 2013.
31. "Acetylsalicylic acid". Jinno Laboratory, School of Materials Science, Toyohashi University of Technology. 4 March 1996. Archived from the original on 20 January 2012. Retrieved 12 April 2014.
32. Bučar DK, Lancaster RW, Bernstein J (June 2015). "Disappearing polymorphs revisited". 54 (24): 69726993. doi:10.1002/anie.201410356. PMC 4479028. PMID 26031248.
33. ^ McNeil JJ, Woods RL, Nelson MR, Reid CM, Kirpach B, Wolfe R, et al. (October 2018). "Effect of Aspirin on Disability-free Survival in the Healthy Elderly". . 379 (16): 1499–
34. Jump up to:a b Algra AM, Rothwell PM (May 2012). "Effects of regular aspirin on long-term cancer incidence and metastasis: a systematic comparison of evidence from observational studies versus randomised trials". The Lancet. Oncology. 13 (5): 518–27. doi:10.1016/S1470-2045(12)70112-2. PMID 22440112.

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